

The Yocto Project: 5 Year Plan, Now What?

yocto
PROJECT

Andrew Wafaa, Arm
Megan Knight, AWS

A pixel art landscape featuring rolling green hills under a light blue sky with a yellow sun and purple clouds. On the left, a wizard in a purple robe and hat stands near a large green tree. In the center, a green dragon is perched on a hill. On the right, a woman with long white hair and a green dress stands near a wooden bench. The foreground is a field of green grass with small pink and blue flowers. A dark grey path leads from the bottom left towards the center.

5 Year Plan Origin Story

5 Year Plan Development

Member Driven Initiative

Focus on Project **Sustainability** and **Security**

Sustainability of the **Project**, the **Technology**, and the **People**





**Maintainer
Gap**

**Contributor
Pipeline**

**Membership +
Alternative
Funding Paths**

**Maintainer
Gap**

**Contributor
Pipeline**

**Membership +
Alternative
Funding Paths**

Identified Gaps to Goal

Funding Requirements
Skilled Developer
Shortage



Created Estimates

Number of Developers
and Time to Deliver



We need 

Member Buy-In: All new membership in
2023+ dedicated to 5YP



HAVE YOU EXPLORED THE
NEW VSCODE EXTENSION?

Areas of Focus Then and Now

TOASTER &
PATCHTEST TOO!



Patchtest

Toaster

**Core
Workflow**

**Project
Tooling**

meta-oe

Security

VSCode IDE

**Binary
Distro**

**Layer
Setup**

yocto • + SOVEREIGN TECH FUND
PROJECT

Improving Long-Term Sustainability and
Security



Patchtest

Toaster

**Core
Workflow**

**Project
Tooling**

meta-oe

Security

VSCode IDE

**Binary
Distro**

**Layer
Setup**

Patchtest



Workflow is email patch submission

patchwork is used to manage
patches sent to mailing lists

patchtest implemented on top of
patchwork

Updates to *patchwork* broke
patchtest

Test can run directly from
OpenEmbedded-core

Patchtest runs on mailing list
submissions

Toaster



Savoir-faire
LINUX®

Toaster is a web-based user interface to *bitbake*

Based on data collected by user interface designers

Ensured toaster works with the current code base

Updated automated tests and ensured they run on autobuilder

Enabled and document the standalone and existing build workflows



Core Workflow



Building everything from source
does take time

Many people are building the
same configurations

Goal: Reduce frustration and
build times

More tests for common shared
state mismatches

New commands to lock specific
components in shared state

New tools to help understand
when something rebuilds and we
think it shouldn't

Project Tooling



Over the years, several tools to automate common developer tasks created: recipetool and devtool

Maintainers moved on to other tools/tasks

Clear backlogged feature and bugs
devtool improved to support multiple git repositories and submodules

recipetool better supports go, perl, rust and python

Many pseudo and User/Group setting bugs fixed

Proof of concept for runtime testing with a qemu screen created

meta-openembedded



OpenEmbedded Classic was one layer with all the recipes

Maintenance challenges drove the creation of the Yocto Project

Goals: Improve testing and formalize processes

Added CVE checking

Automatic upgrade helper can run for meta-openembedded

Patch status checks can be enabled per layer

Create a deprecation policy for recipes in layers

Add a reproducibility report for meta-openembedded

Security

No dedicated team for security

No formalized processes in place

Enable tools for end users that make SBOM generation simple

Project security processes identified and documented

Implemented the processes

Established and trained a security team

Developed a proof of concept of the upcoming SPDX 3.0 standard

Enabled SPDX manifest generation as the default

*Thank you Marta!

VSCode IDE



Savoir-faire
LINUX®

For the cool kids

Potential to lower the perceived complexity using bitbake

Integrate with build environment

Launched at Embedded World last week

Plug-ins to multiple IDEs coming

Binary Distro



YP creates tools to build source based distributions

In many cases we need to build multiple images from the same build

Shared state has the binaries, but isn't as convenient as standard package formats

Work in Progress!

Layer Setup



Minimal useful system has
openembedded-core and a BSP

Typical systems add 2-5 more
layers

Many existing solutions, repos,
combo layers, git submodules,
bitbake features

If you speak to 3 developers you
will get 6 solutions

Work in Progress!

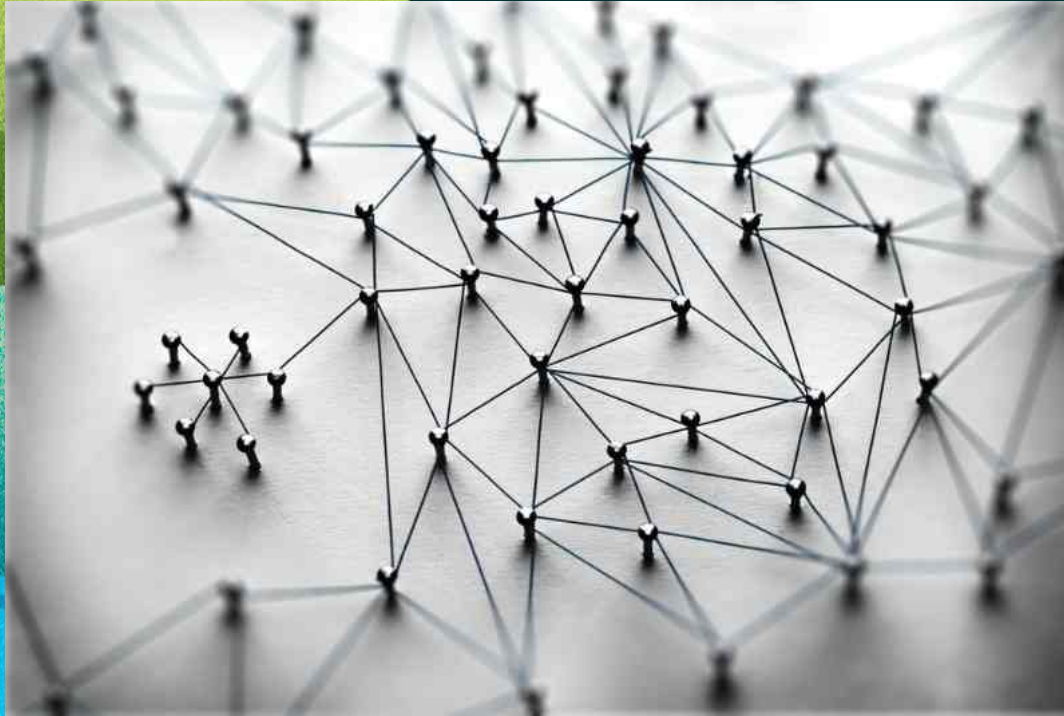
A vibrant pixel art landscape featuring rolling green hills, a blue sky with floating islands, and a grassy foreground with colorful flowers. In the lower-left, a wizard with a purple robe and a pointed hat stands next to a small pink cat. In the upper-middle, a green dragon with wings is perched on a tree. In the lower-right, a fairy with white hair and a green dress stands near a wooden bench. Three speech bubbles are overlaid on the scene, containing text about VS Code extensions and a 5-year plan.

HAVE YOU EXPLORED THE
NEW VSCODE EXTENSION?

5 year plan ✓
Now what?

TOASTER &
PATCHTEST TOO!

Expand Our Capabilities



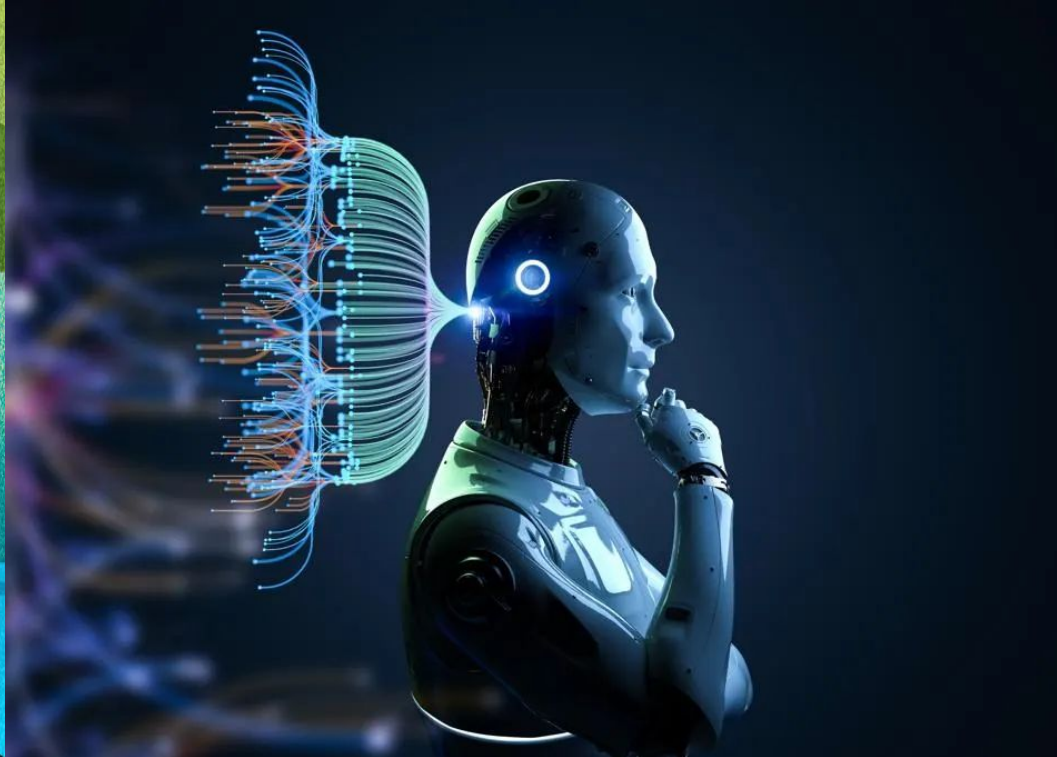
Why Just Linux?



More Architecture Support



It's 2024, surely we are thinking about:





How to Get Involved

Contributors Needed

Feedback on new tooling

New members



YOCTO PROJECT BoF

Thursday, April 18

2:00 - 2:40 pm | Room 433 (Level 4)

Speaker:

Philip Balister, OpenEmbedded

THANK YOU!



yocto
PROJECT

THE
LINUX
FOUNDATION